

Organ/ Tissue	Sympathetic		Parasympathetic	
	Action	Receptor	Action	Receptor
<b>Effects of ANS Activity on the EYE</b>				
Radial muscle of iris	dilate pupil (mydriasis)	$\alpha_1$	constrict (miosis)	M3
Circular muscle of iris				
Ciliary m. effects lens	[relax, for far vision]	$[\beta_2]$	contract, accommodate for near vision	M3
Lacrimal gland	[secretion]	$[\alpha]$	secretion	M3
<b>Effects of ANS Activity on the HEART</b>				
SA node	$\uparrow$ rate	$\beta_1$	$\downarrow$ rate	M2
Atria	$\uparrow$ contractility, conduction velocity	$\beta_1$	$\downarrow$ contractility	M2
AV node	$\uparrow$ conduction velocity, automaticity	$\beta_1$	$\downarrow$ conduction velocity, conduction block	M2
His-Purkinje system	$\uparrow$ conduction velocity, automaticity	$\beta_1$	-	M2
Ventricle	$\uparrow$ conduction vel., automatic., contractility	$\beta_1$	-	M2
<b>Effects of ANS Activity on the BLOOD VESSELS</b>				
ALL arteries	constrict	$\alpha_1$	-	M3
Skeletal muscle beds	constrict; dilate	$\alpha_1; \beta_2$	[dilate]	[M3]
Abdominal viscera	constrict; dilate	$\alpha_1; \beta_2$	-	M3
Renal	constrict, dilate	$\alpha_1; \beta_2$	-	M3
Endothelium			-	M3
Veins	constrict; relax	$\alpha_1, \alpha_2; \beta_2$	-	M3
<b>Effects of ANS Activity on the LUNGS</b>				
Airway smooth muscle	relaxation	$\beta_2$	contraction	M2, M3
Bronchial glands	$\downarrow$ secretion $\uparrow$ secretion	$\alpha_1$ $\beta_2$	$\uparrow$ secretion	M3
<b>Effects of ANS Activity on the GASTROINTESTINAL TRACT</b>				
Sm. m. motility & tone	[ $\downarrow$ usually]	$[\alpha_1, \alpha_2; \beta_1, \beta_2]$	$\uparrow$	M3
Sphincters	[contraction usually]	$[\alpha_1]$	[relaxation usually]	[M2, M3]
Secretion	[inhibition]	$[\alpha_2]$	stimulation	M3
<b>Effects of ANS Activity on GENITO-URINARY ORGANS</b>				
Kidney	renin secretion	$\beta_1$	-	-
Detrusor muscle	relaxation	$\beta_2$	contraction	M3
Trigone & sphincter	contraction	$\alpha_1$	relaxation	M3
Pregnant uterus	contraction; relaxation	$\alpha_1; \beta_2$	[variable]	[M]
Sex organs: male	ejaculation	$\alpha_1$	erection	M3

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<b>Effects of ANS Activity on the SKIN</b>				
Pilomotor muscles	contraction	$\alpha_1$		
Sweat glands	Apocrine - localized secretion	$\alpha_1$		
	Eccrine - generalized secretion	M2, M3		
<b>Effects of ANS Activity on OTHER SITES</b>				
Spleen capsule	[contract]	[ $\alpha_1$ ]		
Adrenal medulla	release E & NE			N
Salivary glands	[K <sup>+</sup> and water secretion]	[ $\alpha_1$ ]	K <sup>+</sup> and water secretion	M3
Nasopharyngeal gland	-		secretion	M3
<b>Effects of ANS Activity on METABOLISM</b>				
Skeletal muscle	glycogenolysis; K <sup>+</sup> uptake	$\beta_2$	-	-
Liver	glycogenolysis; gluconeogenesis	$\alpha_1$ ; $\beta_2$	-	-
Pancreas: acini	decreased secretion	$\alpha$	secretion	M2, M3
Pancreas: islets ( $\beta$ cell)	decreased secretion; increased secretion	$\alpha_2$ ; $\beta_2$	-	
Fat cells	lipolysis	$\beta_3$	-	-